regulations and perhaps subsidies to leading booksellers. The other measures proposed are identical with those contained in the memorandum of the University of Petrograd.

The Academy of Sciences proposes further to call together soon a special congress of representatives of universities, learned societies, and other learned bodies in order to discuss the practical ways and means towards promoting a closer scientific relationship with Great Britain.

B. Menschutkin.

NOTES.

The secretary to the Reconstruction Committee has favoured us with the following list of the members of the committee: The Right Hon. the Prime Minister (chairman); the Right Hon. E. S. Montagu, M.P. (vice-chairman); Prof. W. G. S. Adams; Mr. J. R. Clynes, M.P.; Sir A. M. Duckham, K.C.B.; Mr. Richard Hazleton, M.P.; Major J. W. Hills, M.P.; Mr. Thomas Jones; Mr. P. H. Kerr; Dr. Marion Phillips; Mr. B. Seebohm Rowntree; the Most Hon. the Marquess of Salisbury, K.G., G.C.V.O.; Mr. Leslie Scott, K.C., M.P.; Sir J. Stevenson, Bart.; Mr. J. H. Thomas, M.P.; and Mrs. Sidney Webb.

A summary of the Rockefeller Foundation grants for 1916 is contained in a pamphlet published in New York on March 19. The total amount of the grants made during the year was 1,649,820*l*. The largest grants were for war relief, and these reached 518,000*l*. in 1916, making 836,400*l*. since the beginning of the war. To the National Health Board 122,300*l*. was given, chiefly for the relief and control of "Hookworm" disease in the southern States, several Latin-American countries, and in certain British colonies. The board has also made a survey of the principal endemic foci of yellow fever, and experiments for the control of malaria. The China Medical Board received during the year 213,630*l*. for the promotion of medical education in China. Among the largest of the single contributions of the Foundation to outside agencies was the gift of 200,000*l*. to the New York Palisades Interstate Park Commission towards the sum necessary for the enlargement and improvement of the Palisades Interstate Park.

Prof. Emil von Behring, whose death was announced in Nature of April 5, was born at Hansdorf in 1854. He received his professional education at the Army Medical College, Berlin, obtaining his doctor's degree in 1878. He afterwards served in the Army, and in 1889 was appointed assistant at the Institute of Hygiene, Berlin, being transferred later, in 1891, to a corresponding post in Koch's Institute for Infectious Diseases. He there commenced his researches on immunity in diphtheria, culminating in 1893 in the discovery and preparation of diphtheria antitoxin. For this work he received prizes from the Académie de Médecine of Paris and the Institute of France. In 1894 he received the title of "Professor" in recognition of his scientific work, and was appointed to the chair of hygiene in the University of Halle. In the following year he accepted a call to Marburg, where he held the post of professor and director of the Institute of Hygiene. In 1895 the title of Medical Privy Councillor was conferred upon him. Although Behring's name is best known in connection with the discovery of diphtheria antitoxin, he also carried out researches on tuberculosis, ascribing the major part of tuberculosis in children to infection from tuberculous milk, and prepared a form of tuberculin, "tulase," by the action of chloral on tubercle bacilli, which, however, does not appear to have more value than other forms of tuberculin. In 1913 he published an investigation on diphtheria bacilli carriers, and proposed to treat these with a mixture of diphtheria antitoxin and diphtheria toxin. With Löffler and Ehrlich, who have also died during the course of the present war, Behring must be regarded as one of the band of pioneers of modern bacteriology and immunology.

The permanent committee for the study of the natural resources of the Russian Empire, formed by the Petrograd Academy of Sciences in 1915, has begun to publish the great work "Natural Productive Forces of Russia," which is intended to give, so far as it is at present possible, a complete review of the natural wealth of Russia, destined to play an important part in the future economic development of the country. This work will form six volumes—about 2400 pages large octavo—and is being printed in the Government printing office. The contents of the volumes will be as follows: Vol. i., "Utilisation of the Force of Wind." This volume is being prepared by a special sub-committee (president, M. A. Rykačev), and will be devoted to (1) the necessary meteorological data; (2) wind-motors, their best types, cost, and uses. Vol. ii., "White Coal"; a sub-committee under the presidency of V. T. Vernadskij will give (1) a geological and hydrological description of different regions of Russia; (2) characteristics of separate rivers and data for the utilisation of their water-power. Vol. iii., "Artesian Waters," by a sub-committee presided over by N. T. Andrusov. Contents. (1) Geological data in connection with water-bearing strata of different regions of Russia; (2) artesian bores already in existence and the future possibilities. Vol. iv., "Useful Minerals," is prepared by the geological committee and edited by K. T. Bogdanovič. It will give trustworthy information about the occurrence, localities, quantities, and properties of different ore deposits and important minerals of Russia. Vol. v., "Plants," edited by a sub-committee of specialists under T. P. Borodin: botanico-geographical review of the Russian Empire and a description of all the cultures of different regions in relation to agriculture and the utilisation of plants. Vol. vi., "Animals," edited by V. K. Bražnikov and E. F Liskun: (1) Systematic survey of the animal representatives, wild and domestic; (2) utilisation of wild and domestic animals. The edition is limited to 5000 copies; the subscription price for all the six volumes is 10 roubles (=14*s*. at the present rate of exchange). The committee for the study of the natural resources of Russia has also edited during 1916 twelve monographs, under the title of "Materials for the Study of the Natural Productive Forces of Russia," dealing with ore deposits of different metals, medicinal plants, clays, etc.; and about a hundred more are in course of printing and preparation. These monographs are published by the Imperial Academy of Sciences.

The Hanbury gold medal for 1917 has been awarded to Prof. H. G. Greenish, professor of pharmaceutics to the Pharmaceutical Society of Great Britain.

The Fothergillian medal of the Medical Society of London for 1917 has been awarded to Sir Leonard Rogers, of the Calcutta Medical College, for his work on dysenteries, their differentiation and treatment.

The treasurers of the Middlesex Hospital have received a donation of 1000*l*. from Sir John and Lady Bland-Sutton and 25*l*. from Mr. G. Vaughan Morgan in response to the appeal on behalf of the research fund of the pathological institute of the hospital.

The seventh May lecture of the Institute of Metals will be delivered at the Institution of Civil Engineers on Thursday, May 3, at 8.30 p.m., by Prof. W. E. Dalby, on "Researches made Possible by the Autographic Load-extension Optical Indicator."

The Jacksonian prize of the Royal College of Surgeons of England for 1916 has been awarded to Mr. E. W. H. Groves for his dissertation on "Methods and Results of Transplantation of Bone in the Repair of Defects caused by Injury or Disease." The subject for the Jacksonian prize for 1918 is "The Injuries and Diseases of the Pancreas and their Surgical Treatment."

The death is announced, in his seventy-fourth year, of Dr. H. B. Cornwall, professor of applied chemistry and mineralogy at Princeton University from 1873 to 1910. He previously held posts on the faculty of Columbia University, and was for a short time the superintendent of a mining company in Mexico. He was the author of a manual of blow-pipe analysis and other works.

The next informal meeting of the Chemical Society will be held at Burlington House, W., on Thursday, May 10, at 8 p.m. Owing to ill-health, Dr. Horace T. Brown will be unable to deliver, on May 17, his lecture entitled "The Principles of Diffusion: Their Analogies and Applications" as previously announced. The lecture has been postponed for the time, and the usual ordinary scientific meeting will be held on that day.

We learn from the *Morning Post* that Mr. W. P. Fraser, plant pathologist, of Macdonald College, has been appointed to investigate the problem of grain rust on the prairie provinces of Western Canada. The Canadian Minister of Agriculture, the Hon. Martin Burrell, has been devoting special attention to the problem, and two well-equipped laboratories have been built on the experimental farms at Brandon and Indian Head.

The death is announced of Sir Albert J. Durston, Engineer-in-Chief of the Navy from 1889 to 1907. We learn from the *Times* that Sir Albert was born in 1846, and was educated privately, in Portsmouth Dockyard, and at the Royal School of Naval Architecture, South Kensington. He entered the Royal Navy in 1866, became chief engineer in 1877, chief inspector of machinery in 1893, and chief engineer at Sheerness and Portsmouth in 1881. During his administration of the engineering department there were introduced the water-tube boiler, the turbine system of propulsion, and the use of oil fuel—all inventions which made for the increase in engine-power and the speed of the ships of the Fleet which has been so noticeable and valuable during the war.

We learn from the *British Medical Journal* that Surgeon-General Sir William Taylor, K.C.B., late Director-General, Army Medical Staff, died at Windsor on March 10, aged seventy-four. In 1898 Sir William was appointed principal medical officer to the British Army in India and held that post for three years, until he became Director-General of the Army Medical Service on December 3, 1901, in the late stage of the Boer war. On August 21, 1901, he was gazetted honorary physician to the King, and in 1902 received the K.C.B. His *Alma Mater*, the University of Glasgow, bestowed upon him the honorary degree of LL.D. He retired on December 2, 1904, after forty years' service in the Army, during which he had served in six campaigns, and had risen to the highest position open to a medical officer.

At the annual general meeting of the Institution of Civil Engineers held on April 17 the result of the ballot for the election of officers was declared as follows: *President:* Mr. W. B. Worthington. *Vice-presidents:* Mr. J. A. F. Aspinall, Mr. H. E. Jones, Sir John P. Griffith, and Mr. J. A. Brodie. *Other Members of Council:* Dr. C. C. Carpenter; Dr. Dugald Clerk; Col. R. E. B. Crompton; Mr. M. Deacon; Sir Archibald Denny, Bart.; Mr. W. H. Ellis; Sir R. R. Gales; Mr. A. J. Goldsmith; Sir R. A. Hadfield; Brigadier-General B. H. Henderson; Mr. R. W. Holmes; Prof. Bertram Hopkinson; Mr. G. W. Humphreys; Mr. Summers Hunter; Dr. W. H. Maw; Mr. C. L. Morgan; Mr. Basil Mott; Sir H. J. Oram; Mr. F. Palmer; Capt. H. P. R. Sankey; Sir J. F. C. Snell; Mr. E. F. C. Trench; Mr. W. F. Tye; Sir Philip Watts; Mr. E. J. Way; and Sir A. F. Yarrow, Bart. The council has made the following awards for papers read and discussed during the session 1916–17: Telford gold medals to Messrs. G. W. Humphreys and J. B. Ball; George Stephenson gold medals to Messrs. P. V. O'Brien and John Parr; Telford premiums to Messrs. P. V. O'Brien, J. L. Hodgson, W. Brown, and P. M. Crosthwaite; and a Crampton prize to Mr. F. J. Waring.

Mr. Abel Chapman, in the *Scottish Naturalist* for April, demolishes the contention that there are two distinct sub-specific forms of the Brent goose, both of which, according to the most recent text-books, are to be found in the British Islands. The one is supposed to have a light-, the other a dark-coloured breast. Mr. Chapman is of opinion that these differences merely indicate dimorphism. And it would seem that the ornithologists who made the "sub-species" to which he objects have come to the conclusion that Mr. Chapman's interpretation is the right one.

The extreme severity of the weather since January has told heavily on our native birds. One of the first records of this fact is that by Mr. H. M. Wallis in *British Birds* for April. During the February frost, in West Cornwall, he remarks, lapwings haunted the town rubbish-heaps and tiny grass plots in front of suburban houses; finally, they came to the windows for food, but eventually most of them seem to have died from starvation, their dead bodies, dreadfully emaciated, being picked up in gardens, beside roads, and in almost every field. After the lapwings, golden plover, gulls, thrushes, and starlings seem to have suffered most, though many other species are enumerated in his list of dead.

The British Museum (Natural History) has just issued, in pamphlet form, some "Instructions for Collectors,' dealing with the preparation of mammal skeletons in the field, with special notes on the collection of specimens of Cetacea. Since the skin of the latter cannot be successfully preserved, special emphasis is laid on the need for careful notes and measurements of carcases before dismemberment. Attention is also directed to the importance of very careful notes as to the colour of the "whale-bone" in baleen whales, and the number and position of the teeth in the "toothed" whales. In all cases, it is remarked, sketches or photographs of the external appearance of a Cetacean should be made before the work of preparing the skeleton is begun. These "Instructions" have been carefully drawn up by Dr. S. F. Harmer, the keeper of the department of zoology, and should prove very welcome.

The insects attacking stored wheat in the Punjab are described, with admirable coloured illustrations, by J. H. Barnes and A. J. Grove in the Memoirs of the

Department of Agriculture in India (vol. iv., No. 6). This paper is especially noteworthy for a discussion of the effect on the insects of inert gases and variations in temperature and moisture, as connected with the respiratory function. Hydrogen kills beetles more rapidly than nitrogen, and nitrogen than carbon dioxide; an increase in temperature causes a shortening of the lethal period. As to the effect of moisture, Calandra and Rhizopertha are destroyed by desiccation, but Attagenus "prefers dry conditions to moist ones."

IT is thirty years since Profs. Tracy and Goff established in the United States the value of tarred paper discs in preventing the access to cabbage-roots of the cabbage-fly (*Phorbia brassicae*) for the purpose of egg-laying. Although the maggots of this insect are among the most destructive farm and garden pests known to us in these islands, British and Irish cultivators who have heard of the American preventive measure have usually derided it. They may perhaps be convinced by the "Report on a Trial of Tarred Felt Discs for Protecting Cabbages and Cauliflowers," which Mr. J. T. Wadsworth publishes in the *Annals of Applied Biology* (vol. iii., 1917, pp. 82–92). From his research, carried out for the Manchester University Department of Agricultural Entomology, it appears that 63 per cent. of unprotected cauliflowers and 13·2 per cent. of unprotected cabbages are lost, as against 5·1 per cent. and 0·2 per cent. respectively of those plants provided with cards. We understand that a local merchant is now putting effective discs on the market.

THE grading for stock-feeding purposes of the various "offals" produced in the milling of wheat has always been a source of much confusion to the farmer and his advisers. It is a common experience for offals sold under a particular name in one district to differ widely, both in general character and in chemical composition, from materials sold under the same names in other districts. The confusion is mainly due to local variations in milling practice, and little success has attended past efforts at standardisation. A substantial advance should now be possible, however, in the light of observations made by Messrs. T. B. Wood and R. H. Adie, which are recorded in the March issue of the *Journal of the Board of Agriculture*. Their results indicate that, excluding the extreme fractions, flour and bran, milling offals may be classified into three "pure grades" (fine middlings, coarse middlings, and pollards) coming from the mills where the intermediate offals are most completely separated, and three "mixed grades" coming from mills where the offals are not so completely divided. The number of samples examined by Messrs. Wood and Adie, though not large enough to establish standard compositions for the "pure grades," was sufficient to demonstrate that these grades are characterised, not only by a limited range in the size of their particles, but by a definite chemical composition. It is suggested that millers should adopt a uniform system of grading and naming their offals, and a simple method of achieving the latter object, whilst retaining the local trade names, is indicated.

MESSRS. STANFORD have just issued a new and enlarged edition of No. 17 of their large-scale war maps; it includes Tournai, Cambrai, and the environs of St. Quentin on the east, and shows the defensive line held by the enemy from the date of the Marne defeat until the opening of the Somme battle; and it also shows the line to which the enemy had been driven by April 17 during the battle of Arras. An interesting feature of this series is the diagrammatic way in which the levels of the land are shown; tints of brown colour distinguish the land lying between sea-level and 125 ft. above, between 125 ft. and 250 ft., 250 ft. and 500 ft., and 500 ft. and 1000 ft. above sea-level; this gives the map-reader an excellent idea of the lie of the country.

IN a Bulletin issued by the Department of Chemistry, Adelaide, the director, Dr. Hargreaves, discusses the practicability of manufacturing cream of tartar in South Australia. Grapes, the source of tartar, are largely grown in the country, but at present all the tartaric acid and most of the cream of tartar used in South Australia are imported from Europe. Experiments showed that a quite satisfactory process was available. The wine lees receive a preliminary roasting at a temperature of 120° to 150° C., which is high enough to decompose the albuminous and organic colouring matters without injuring the cream of tartar; this much facilitates filtration. The cream of tartar is then extracted with hot water, filtered, and crystallised out. There is not a promising field for a large industry, because the total possible production, it is calculated, would not be sufficient to supply the needs of the country. Nevertheless, the available tartar should not be allowed to go to waste as at present, and a start has been made with the manufacture.

WE learn from the *Geographical Journal* for April (vol. xlix., No. 4) that, at the request of the Astronomer Royal, the Royal Geographical Society is collecting information about possible observing stations for the total solar eclipse on May 29, 1919. The eclipse passes over the Amazon basin, the Atlantic Ocean, and the Congo basin to Tanganyika. Possible stations are suggested in the State of Ceará in Brazil, the Island of Principe, the neighbourhood of Libreville in the French Congo, and on the western escarpment of Tanganyika. Between Libreville and Tanganyika the forest conditions preclude the possibility of a station The essential conditions for an eclipse camp are the good chance of clear weather; reasonable accessibility, with means of transport for heavy instruments; available local labour and materials for the construction of huts and the foundations for instruments; and a good supply of pure water for photography. The society will be grateful to any correspondents who may be so good as to send advice in these matters.

IN fulfilment of the international scheme of which it is the centre, the Meteorological Institute of the Netherlands has recently issued copies of a number of records of magnetic disturbance obtained during 1914 and 1915 at De Bilt Observatory. In all, twenty-three magnetic storms are dealt with—twelve from 1914 and eleven from 1915. In each case the record includes thirty consecutive hours, declination, horizontal-force, and vertical-force traces being shown on the same sheet, referred to a common base or time line. The base-line values and the scale values of the ordinates are marked in each case. The disturbances selected afford excellent examples of "sudden commencements," "bays," slow and rapid oscillations, and isolated tooth-like protuberances on the curves. The tendency in the vertical force to be above its normal value during late afternoon hours in times of disturbance is conspicuous in the majority of instances. One or two of the storms selected for 1915 were of considerable size, especially that of June 17–18. The sensitiveness of the horizontal-force and vertical-force magnetographs is unusually high at De Bilt. This enables details of moderate movements to be more readily recognised, but increases the risk of loss of trace during large movements, and makes it more difficult to prevent interference of traces when three elements are included in a single sheet. Only great care and resourcefulness could have dealt with the difficulties as satisfactorily as has been done in the present case.

In addition to the high prices and short quantities of printing paper now available, strawboard, which is necessary for the binding of books, has risen enormously in price, whilst a famine in that commodity threatens soon to deprive the publishing trade altogether of the power to bind books in cloth. At no distant date, therefore, it is probable that we shall see English books issued with paper covers, a state of things which may continue indefinitely, depending not so much upon the cost of this essential material as the length of time which must elapse, even after the war, before there are again sufficient supplies available. It is clear that in the very near future publishers, binders, and booksellers will have, in regard to the majority of books, to adapt themselves to a new order of things, and the public will have to be satisfied with books issued, as is so widely the custom on the Continent, in paper covers.

Mr. John Murray's new list of announcements contains, among others, "Collected Essays and Addresses," by Sir F. Darwin (some of the subjects dealt with are "Sir Francis Galton," "Sir George Darwin," "The Movements of Plants," "The Education of a Man of Science," and "The Teaching of Science"); a new and revised edition of "The Book of the Rothamsted Experiments," edited by Dr. E. J. Russell, containing a chapter by A. D. Hall on the secondary effects of manures on the soil, and one by Dr. Russell on the production of plant food in the soil; and "A Regimental Surgeon in War and Prison," by Capt. R. V. Dolbey.

OUR ASTRONOMICAL COLUMN.

A New Comet.—In a message to the *Times* of April 20, dated April 19, it is stated that a comet of marked brilliancy had been observed at Sydney. It was seen in the eastern sky at dawn, and Prof. Cooke is said to have described it as a new comet. The position of the comet had not been determined.

Comet *b* 1916 (Wolf).—The following continued ephemeris, for Greenwich midnight, is given by Prof. Crawford in Lick Observatory Bulletin No. 289:—

1917		R.A.			Decl.		Log Δ	Brightness
		h.	m.	s.	°	′		
April	26	20	21	28	+11	12·2	0·1994	2·81
	27		23	55		29·0		
	28		26	22	11	45·9	0·1943	
	29		28	49	12	2·8		
	30		31	16		19·6	0·1892	3·01
May	1		33	43		36·4		
	2		36	9	12	53·2	0·1841	
	3		38	36	13	9·9		
	4		41	2		26·6	0·1791	3·21
	5		43	28		43·2		
	6		45	55	13	59·8	0·1742	
	7		48	21	14	16·4		
	8		50	47		32·9	0·1694	3·42
	9		53	13	14	49·3		
	10		55	38	15	5·7	0·1646	
	11	20	58	4		21·9		
	12	21	0	29		38·1	0·1599	3·63

The unit of brightness is that on March 5, and the figures given in the last column should be multiplied by 17 to reduce to the unit of brightness on 1916 May 10.

The path of the comet during the above period is through the constellation Delphinus. On May 1 the comet rises about 10.45 p.m. G.M.T. It is now an interesting object in the telescope, but it has been disappointingly faint, and it does not seem very probable that it will become visible to the naked eye.

The distance of the comet from the earth on April 30 will be 144,000,000 miles, and on May 10 136,000,000 miles.

The April Lyrids.—These meteors appear to have been more active than usual this year, and the maximum occurred on April 21. On April 20 Mr. Denning watched a beautifully clear sky at Bristol, and recorded twenty-one meteors in three and a quarter hours; of these, six were Lyrids. On April 21 the sky was overcast at Bristol, but Mrs. F. Wilson reports from Totteridge that the firmament cleared at about 11 p.m. G.M.T., and that thirty-five meteors, chiefly Lyrids, were observed in the two and a half hours up to 13.30 G.M.T. Others must have been missed while the paths of the brighter objects were being registered. The radiant point was at $272^\circ + 34^\circ$, and precisely the same as found independently at Bristol on the previous night. One fireball was observed at Totteridge, and the Lyrids were recorded as very swift and as usually leaving streaks.

On April 22 the weather at Bristol was very favourable after 9.30 G.M.T., but a watch for meteors maintained for about two and a quarter hours yielded only six, half of which were Lyrids.

The conclusion that this important meteoric stream recurs under a very plentiful aspect at periods of about sixteen years is confirmed by this year's observations.

Stellar Spectra of Class R.—The second volume of the publications of the Detroit Observatory, which has recently been issued by Prof. Hussey, furnishes further evidence of the energy and thoroughness with which astrophysical investigations are carried on in America. The chief subjects dealt with are stellar spectra of type B containing emission lines, by R. H. Curtiss; observations of stars of class M*d*, by P. W. Merrill; the spectrum of ζ Ursæ Majoris, by L. Hadley; and the spectra of stars of class R, by W. C. Rufus. In each case a review of previous work is a valuable feature, and the volume is enriched by numerous beautiful reproductions of spectra. While all the contributions add considerably to previous knowledge, that on the stars of class R calls for special notice, as there has been much doubt as to the place of these stars in the stellar sequence. The peculiarity of class R spectra is that they include rays of shorter wave-length than is the case with the ordinary fourth type (N) stars. Ten of the sixty-six known members of the class have been studied in great detail and six spectra of class N were also photographed for comparison. Mr. Rufus finds that the strength of carbon absorption is not a distinguishing feature between classes R and N, and that the real criterion for differentiating them is the intensity of the continuous absorption in the violet. The outcome of the discussion is to suggest that stars of class R form a connecting-link between the solar type and class N, and that the evolutionary sequence divides at the solar type, classes K and M forming one branch, and classes R and N constituting the other. The alternative possibility that classes M and K may belong to an ascending branch of the temperature curve, as would be the case in Lockyer's classification, does not appear to have been considered.

The radial velocities of the ten class R stars range from −49 to +25 km. per second, and give an average of 14·9 km. when corrected for the solar motion. The average colour-index is 1·7, as compared with 2·5 for class N.